

Remarks and Arguments

Claims 1-16 were presented for examination. Claims 2, 3, 7-8, 10, 12-13 and 15-16 have been amended. Claims 1 and 9 were canceled and claim 17 was added.

The specification was objected to because the abstract exceeded the 150 word limit. A new abstract that meets the requirements has been attached as a separate sheet as requested by the examiner.

In addition, the disclosure has been objected to because, on page 5, the screw has been referred to by both reference numerals “14” and “15” and, on page 7, the implant body has been referred to by both reference numerals “30” and “3”. In response, paragraph 17 on page 5 and paragraph 20 on page 7 have been amended so that the screw is consistently referred to by reference numeral “15” and the implant body is consistently referred to by reference numeral “30.”

Claim 12 has been objected to reciting the phrase “angle α' ” which should be “angle α ” in order to make the phrase consistent with the remainder of the claim. In addition, the examiner claims that the designations α and α' are reference characters taken from the specification and should be enclosed in parentheses. In response, the requested changes have been made. The two angles recited in the claims are now referred to as a “first angle” and a “second angle.” Claim 12 is now believed to be clear.

Claim 16 has been rejected under 35 U.S.C. §112, second paragraph, for lack of antecedent bases for the terms “the concave part” and the “convex part” in lines 2 and 3, respectively. In response, claim 16 has been amended to make it dependent from claim 15. The terms “the concave part” and the “convex part” now find antecedent bases in claim 15, lines 3 and 5, respectively. Accordingly, claim 16 is now believed to meet the requirements of 35 U.S.C. §112, second paragraph.

Claims 1-6 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,287,115 (Lustig, previously cited.) The examiner comments that the Lustig reference discloses all of the claimed limitations.

In response, claim 1 has been canceled and replaced with new claim 17. New claim 17 has been carefully drafted in order to distinguish over the cited Lustig reference. In particular, new claim 17 now recites in lines 3-7, “...a top portion having ... a first end that mates with the implant body... and, at a second opposing end, a

cylindrical recess ... the bottom of the cylindrical recess being formed as a truncated cone with a surface surrounding the through-borehole and a cone base facing towards the first end. New claim 17 also recites, in lines 8-15, "...a connecting screw ... has a head, the underside of which has a recess with a surface in the form of a negative cone with a cone base facing toward the first end when the connecting screw is in place..." These sections of new claim 17 clearly recite that the bases (widest part) of the truncated cone and conical recess face towards the end of the top portion that mates with the implant body, that is, they face the implant body. With this construction, the connecting screw generates a pressure in the direction of the implant longitudinal axis when the connecting screw is tightened as recited in claim 17, lines 14-15.

The examiner points to Figure 15 of the Lustig patent as disclosing this arrangement. However, although the Lustig connecting screw has a conical portion and the corresponding taper in the implant top portion is conical, it is clear that the widest parts of the respective cones face away from the implant body rather than towards the implant body as recited. Therefore, the Lustig patent does not show a negative cone in the connecting screw head which, in cooperation with a truncated cone in the implant top portion would be able to produce a pressure in the direction of the implant axis without exerting pressure on the top portion circumference. To the contrary, in the Lustig implant, the cone on the underside to the screw head in cooperation with the negative cone in the implant top portion, produces a pressure component which is directed away from the axis of the implant and towards the circumference of the top portion.

Therefore, new claim 17 patentably distinguishes over the cited Lustig reference. Claims 2-6 are dependent, either directly or indirectly, on claim 1 and incorporate the limitations thereof. Therefore, they distinguish over the Lustig reference in the same manner as claim 1.

Claims 7-9 and 12-14 have been rejected as obvious over Lustig in view of U.S. Patent No. 4,793,808 (Kirsh.) The examiner comments that Lustig discloses all of the claimed elements with the exception that it does not disclose that the implant top portion is elastically deformable under pressure exerted from the screw. However, the examiner asserts that the Kirsh reference discloses an implant with a top portion that is

elastically deformable under the action of a screw. The examiner concludes that it would have been obvious to combine the teachings of Lustig and Kirsh in order to insure that the connection between the top portion and the implant body cannot be loosened.

Both the Lustig patent and the Kirsh patent relate to dental implants comprising a tiltable connection between the abutment (or fastening head) and the implant body. This tiltable connection allows the axis of the abutment to be directionally adjusted with regard to the implant body. However, neither reference discloses a connecting screw with a negative conical recess in the underside of the screw head which contacts a truncated cone in the abutment as recited in claim 17. Claims 7-8 and 12-14 are dependent on claim 17 and incorporate the limitations thereof. Therefore, they distinguish over the combination of the Lustig and Kirsh references in the same manner as claim 17 distinguishes over the Lustig reference as discussed above. Claim 9 has been canceled, thereby rendering the rejection thereof moot.

Claims 15 and 16 have been rejected as obvious over Lustig in view of U.S. Kirsh and further in view of U.S. Patent Publication No. 2003/0068599 (Balfour.) The examiner comments that the combination of Lustig and Kirsh discloses all of the claimed elements with the exception that it does not disclose a dental implant with a bell-shaped interface area between the abutment and the implant body in which the radius of curvature of a concave recess in the abutment is smaller than a radius of curvature of a coved part of the implant body. However, the examiner asserts that the Balfour reference discloses such a configuration and concludes that it would have been obvious to combine the teachings of Lustig, Kirsh and Balfour in order to provide an alternate means to attach the abutment to the implant body.

The Balfour reference discloses a dental implant which has an esthetic coronal profile head disposed between a threaded base part and attachment post. The profile of this head is bell shaped. However, the Balfour reference does not teach a structure as defined in claims 15 and 16 comprising an interface area between an implant body and an implant top portion which has an approximately bell-shaped profile. Thus, the combination of Lustig, Kirsh and Balfour cannot teach the elements recited in claims 15 and 16 (and in the claims, including claim 17, on which these claims depend).

Consequently, claims 15 and 16 patentably distinguish over the cited reference combination.

Claims 10 and 11 were indicated as allowable, if rewritten in independent form and incorporating the limitations of the base and any intervening claims. In response, claim 10 has been amended to incorporate the limitations of claims 1, 3 and 7 on which it originally depended. Claim 10 should now be allowable. Claim 11, which depends on claim 10, should also be allowable.

In light of the forgoing amendments and remarks, this application is now believed in condition for allowance and a notice of allowance is earnestly solicited. If the examiner has any further questions regarding this amendment, he is invited to call applicants' attorney at the number listed below. The examiner is hereby authorized to charge any fees or direct any payment under 37 C.F.R. §§1.17, 1.16 to Deposit Account number 50-3969.

Respectfully submitted

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